

PATENT ABSTRACTS OF JAPAN

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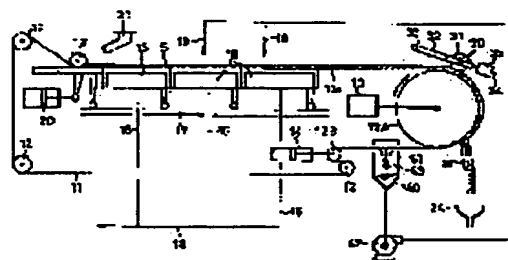
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(54) HORIZONTAL BELT FILTER

(57)Abstract:

PROBLEM TO BE SOLVED: To improve the dehydration and filtration effect of a horizontal belt filter by securing the stable running of a filter cloth.

SOLUTION: The filter cloth 11 keeps running speed constant regardless of the fluctuation of feed quantity and water content of raw slurry S without slipping by inserting the filter cloth 11 between a driving roll 12A and a press roll 30 during the revolving and running of the filter cloth 11. Since a weight 35 being a control means of contact force can apply an adequate contact force in accordance with the feed quantity of the supplied raw slurry S, the filter cloth 11 stably runs.



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CLAIMS

[Claim(s)]

[Claim 1] The level belt filter characterized by coming to prepare a means control the contact force between said filter cloth and a roll with ** in the level belt filter equipped with the filter cloth of the shape of endless [which goes between two or more rolls containing a drive roll around], and a vacuum filtration means filter the undiluted-solution slurry supplied on this filter cloth from the vacuum chamber caudad prepared in this filter cloth while installing a pivotable roll with ** in said drive roll side by side in contact with said filter cloth.

[Claim 2] The level belt filter according to claim 1 characterized by making the spray nozzle for wash water counter the filter cloth immediately after exfoliating solid-state residue, and coming to prepare this nozzle crosswise [of this filter cloth] free [reciprocation].

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the level belt filter used in order that dehydration, filtration, washing, etc. may carry out a solid-liquid slurry in technical fields, such as the chemical industry, physic industry, and food stuff industry.

[0002]

[Description of the Prior Art] It has the filter cloth of the shape of endless [whose circumference was wound among two or more rolls by JP,55-33368,B etc. and enabled in the predetermined transit direction], and the so-called level belt filter which carries out the vacuum filtration of the solid-liquid slurry supplied on the filter cloth in the part this filter cloth runs horizontally from the vacuum chamber caudad prepared in this filter cloth is known.

[0003] that drawing 4 indicates an example of this conventional kind of level belt filter to be -- it is -- the rolls 2 and 2 of plurality [filter cloth / 1 / endless-like] -- it is wound around .. and the center of the upper part of a filter cloth 1 is extended horizontally. Two or more rolls 2 and 2 .. The filter cloth 1 of roll 2A located in the transit direction side in a part for a horizontal level is the drive roll with which the driving means of motor 3 grade was connected inside, and, ahead [the], stress roll 2B to which the stress means of air-cylinder 4 grade was connected is prepared further.

[0004] moreover, under [for a horizontal level / a filter cloth 1], it sticks to the inferior surface of tongue of a filter cloth 1 -- making -- two or more vacuum chambers 5 and 5 .. arranges -- having -- these vacuum chambers 5 and 5 -- it connects with suction means, such as a vacuum pump which .. is not illustrating. Furthermore, between drive roll 2A and stress roll 2B, the filter cloth washing station 6 for washing a filter cloth 1 is formed, and while carrying out separation recovery of the solid-state residue which was not able to be collected with the scraper 9 which following-** with wash water, the blinding of a filter cloth 1 can be washed. In this washing station 6, wash water is injected towards a filter cloth 1 from the fixed spray nozzle 7.

[0005] In the above-mentioned belt filter, the undiluted solution slurry S is supplied on a filter cloth 1 from the nozzle 8 prepared in the start edge side upper part for the horizontal level of a filter cloth 1. transit of a filter cloth 1 -- doubling -- vacuum chambers 5 and 5 -- it moves forward, .. also carrying out vacuum suction of the undiluted solution slurry S -- making -- vacuum chambers 5 and 5, while vacuum suction will be canceled, if .. arrives at the maximum advance location A vacuum chamber 5 retreats to the original location, and it carries out vacuum suction of the undiluted solution slurry S, moving forward with a filter cloth 1 again subsequently. Moreover, it washes by performing Kakemizu to the undiluted solution slurry S on this vacuum chamber 5. And by repeating such actuation, sequential filtration of the undiluted solution slurry S supplied on the filter cloth 1 is carried out, and exfoliation recovery of the solid-state residue is carried out from scraping and a filter cloth 11 with the scraper 9 formed in drive roll 12A.

[0006] Although the flare condition of a filter cloth 1 can be adjusted now in the above-mentioned belt filter with the filter cloth stress means which consists of an air cylinder 4 and a stress roll 2B If the amount of supply of the undiluted solution slurry S which should be carried out a vacuum filtration is changed and default value is exceeded The belt filter concerned is the

travel speed and vacuum chambers 5 and 5 of a filter cloth 1.. It is connected also with adopting the structure of aligning passing speed, a filter cloth 1 slips, and the trouble that the travel speed of a filter cloth 1 is not fixed occurs.

[0007] Moreover, in the spray nozzle 7 fixed [in the above-mentioned filter cloth washing station 6], since a filter cloth 1 could not fully be washed, it was easy to produce the blinding of a filter cloth 1, and exchange of a filter cloth 1 had to be performed frequently, and long-term continuous running was not completed.

[0008]

[Problem(s) to be Solved by the Invention] This invention raises dehydration of a level belt filter and the filtration effectiveness for the purpose of securing stable transit of a filter cloth for the undiluted solution slurry supplied on the filter cloth which goes around in the predetermined transit direction the 1st in a vacuum filtration and the level belt filter to wash irrespective of fluctuation of the amount of supply of an undiluted solution slurry, and the amount of Kakemizu. Moreover, it is made for the purpose of washing effectively the filter cloth through which solid-state residue adhered to the 2nd, and preventing the blinding of a filter cloth, with making possible long-term continuous running of a level belt filter.

[0009]

[Means for Solving the Problem] This invention is characterized by coming to prepare a means control the contact force between said filter cloth and a roll with ** in the level belt filter equipped with the filter cloth of the shape of endless [which goes between two or more rolls containing a drive roll around], and a vacuum filtration means filter the undiluted-solution slurry supplied on this filter cloth from the vacuum chamber caudad prepared in this filter cloth while it installs a pivotable roll with ** in said drive roll side by side in contact with said filter cloth.

[0010] Here, contact force means the thrust between said drive roll and a roll with **. As a control means of said contact force, it is desirable that it is ***** with picking through a screw to the point of the arm which supports said roll with **.

[0011] Furthermore, as for the level belt filter of this invention, it is desirable to make the spray nozzle for wash water counter the filter cloth immediately after exfoliating solid-state residue, and to come to prepare this nozzle crosswise [of this filter cloth] free [reciprocation].

[0012]

[Function] In the above-mentioned level belt filter, during circumference transit of a filter cloth, since this filter cloth can be put between a drive roll and a roll with **, a filter cloth cannot slip and can maintain a fixed travel speed irrespective of fluctuation of the amount of supply of an undiluted solution slurry, and the amount of Kakemizu. Moreover, according to the amount of supply of the undiluted solution slurry supplied etc., the control means of said contact force can make suitable contact force act, and contributes to stable transit of a filter cloth.

[0013] Since said spray nozzle reciprocates, a filter cloth can be washed without leaving a non-washed part.

[0014]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained, referring to a drawing.

[0015] the side elevation of the level belt filter which drawing 1 requires for this invention -- being shown -- **** -- the endless belt-like filter cloth 11 -- two or more rolls 12 and 12 -- it is wound around .. and extension arrangement of the center of the upper part is carried out horizontally. Rolls 12 and 12 .. When a filter cloth 11 is the drive roll connected with the driving means of the drive reducer with which roll 12A which supports a filter cloth 11 by the end of horizontal level part 11a was equipped with the motor 13 inside and this drive roll 12A rotates, horizontal level part 11a runs to the drive roll 12A side, and filter cloths 11 are rolls 12 and 12.. Circumference transit of the between is carried out. The travel speed of a filter cloth 11 can be adjusted by fluctuating the rotational speed of drive roll 12A. In addition, stress roll 12B to which the stress means of air-cylinder 14 grade was connected ahead of drive roll 12A in the transit direction of a filter cloth 11 is prepared.

[0016] in parallel with horizontal level part 11a, a rail 17 prepares in the lower part of horizontal level part 11a of a filter cloth 11 along the transit direction of a filter cloth 11 -- having -- ****

-- two or more vacuum chambers [rail / 17] 15 and 15 -- movable [..] along with a rail 17, the top-face part opened wide is stuck on the inferior surface of tongue of horizontal level part 11a of a filter cloth 11, and it is made and prepared. vacuum chambers 15 and 15 .. respectively -- the vacuum hose 16 and 16 .. connects -- having -- **** -- each vacuum hose 16 and 16 -- while .. is connected with the filtrate header 18, it connects with the source of a vacuum which is not illustrated.

[0017] vacuum chambers 15 and 15 -- the migration means of air-cylinder 20 grade prepares in .. having -- **** -- an air cylinder 20 -- vacuum chambers 15 and 15 .. aligns with the travel speed of a filter cloth 11, it moves forward, and actuation of retreating to the original location in the place which arrived at the maximum advance location is repeated. vacuum chambers 15 and 15 -- the time of .. being in an advance condition -- vacuum chambers 15 and 15 -- while .. is connected to the source of a vacuum through the vacuum hose 16 and vacuum suction of the undiluted solution slurry S is made through a filter cloth 11 -- vacuum chambers 15 and 15 -- when .. is in a retreat condition, this connection solves -- having -- and the vacuum chambers 15 and 15 .. it is controlled so that inner negative pressure is opened wide.

[0018] Above horizontal level part 11a of a filter cloth 11, the slurry nozzle 21 which supplies the undiluted solution slurry S is formed on the filter cloth 11 at the transit start edge side of a filter cloth 11. moreover, the Kakemizu nozzles 19 and 19 for washing by performing Kakemizu on the undiluted solution slurry S .. is prepared. Furthermore, since a sign 22 exfoliates the solid-state residue on a filter cloth 11, it is the scraper countered and formed in drive roll 12A, and the solid-state residue which exfoliated is collected by the saucer 24.

[0019] the undiluted solution slurry S supplied on horizontal level part 11a of a filter cloth 11 from the slurry nozzle 21 in the above-mentioned level belt filter -- vacuum chambers 15 and 15 -- vacuum suction is carried out by .., and it is filtered and washed. like the above -- vacuum chambers 15 and 15 -- while .. carries out vacuum suction of the undiluted solution slurry S to compensate for transit of a filter cloth 11 -- moving forward -- vacuum chambers 15 and 15 -- if .. arrives at the maximum advance location, while vacuum suction will be canceled -- an air cylinder 20 -- vacuum chambers 15 and 15 .. retreats to the original location, and vacuum suction of the undiluted solution slurry S is carried out, moving forward with a filter cloth 11 again subsequently.

[0020] Next, the roll 30 with ** located in the upper part of drive roll 12A is explained based on drawing 2 which shows the right end section of drawing 1, i.e., the top view of the drive roll 12A neighborhood. Bearing of the roll 30 with ** is carried out to an arm 32 through a pin 31, and the arm 32 is supported to revolve by the body frame which omitted illustration through the arm pin 33. By preparing one pair in parallel with spacing equivalent to the breadth of a filter cloth 11, the rolls 30 and 30 with ** are constituted so that the rolls 30 and 30 with ** can be contacted at the both ends of a filter cloth 11.

[0021] With this operation gestalt, by forming the rolls 30 and 30 with **, a filter cloth 11 can be put between drive roll 12A and the roll 30 with ** during circumference transit of a filter cloth 11, and stable transit of a filter cloth 11 can be secured. That is, a filter cloth 11 cannot slip and can maintain a fixed travel speed irrespective of fluctuation of the amount of supply of the undiluted solution slurry S, and the amount of Kakemizu. Moreover, in the right-and-left both ends to which the rolls 30 and 30 with ** contact a filter cloth 11, since the undiluted solution slurry S is not supplied, it does not usually become the hindrance of a vacuum filtration activity.

[0022] A weight 35 is attached in the point of an arm 32 through a screw 34, and adjustment of the contact force between a filter cloth 11 and the roll 30 with **, i.e., the thrust between drive roll 12A and the roll 30 with **, is enabled. By establishing the control means of such contact force, according to the amount of supply of the undiluted solution slurry S supplied on a filter cloth 11 etc., suitable contact force can be made to act and it becomes possible further to attain the increase in efficiency of filtration and washing.

[0023] Then, the washing station 40 of a filter cloth is explained. In case it is prepared between drive roll 12A and stress roll 12B and a filter cloth 11 passes through the inside of the washing room 41, from the spray nozzle 43 arranged at filter cloth 11 lower part, the washing room 41 which constitutes the filter cloth washing station 40 injects wash water, and is washed. since the

solid-state residue which should be collected as a product is contained in wash water after being injected, it circulates through this wash water to horizontal level part 11a of a filter cloth 11 with a pump 42 -- having -- the Kakemizu nozzles 19 and 19 -- spraying washing is carried out on the undiluted solution slurry S from ..

[0024] Drawing 3 is the horizontal sectional view of the filter cloth washing room 41 showing arrangement of a spray nozzle 43, and a spray nozzle 43 is made to counter a filter cloth 11, and carry out juxtaposition installation crosswise [of a filter cloth 11]. [two or more] moreover, these spray nozzles 43 and 43 -- reciprocation to the cross direction of a filter cloth 11 is enabled by the driving means of the air cylinder which .. is not illustrating, a motor, etc.

[0025] this invention -- setting -- spray nozzles 43 and 43 -- since .. reciprocates, a filter cloth 11 can be washed, without leaving a non-washed part. In addition, about two trains of spray nozzles 43 can heighten a cleaning effect further, if it prepares in the travelling direction of a filter cloth 11 as shown in drawing 3 .

[0026]

[Effect of the Invention] According to invention according to claim 1, since stable transit of a filter cloth is securable irrespective of fluctuation of the amount of supply of an undiluted solution slurry, and the amount of Kakemizu, dehydration of a level belt filter, filtration, and a cleaning effect can be raised.

[0027] According to invention according to claim 2, since the detergency of a filter cloth can be heightened, the cleaning effect of a product can be raised.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the level belt filter used in order that dehydration, filtration, washing, etc. may carry out a solid-liquid slurry in technical fields, such as the chemical industry, physic industry, and food stuff industry.

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PRIOR ART

[Description of the Prior Art] It has the filter cloth of the shape of endless [whose circumference was wound among two or more rolls by JP,55-33368,B etc. and enabled in the predetermined transit direction], and the so-called level belt filter which carries out the vacuum filtration of the solid-liquid slurry supplied on the filter cloth in the part this filter cloth runs horizontally from the vacuum chamber caudad prepared in this filter cloth is known.

[0003] that drawing 4 indicates an example of this conventional kind of level belt filter to be -- it is -- the rolls 2 and 2 of plurality [filter cloth / 1 / endless-like] -- it is wound around .. and the center of the upper part of a filter cloth 1 is extended horizontally. Two or more rolls 2 and 2 .. The filter cloth 1 of roll 2A located in the transit direction side in a part for a horizontal level is the drive roll with which the driving means of motor 3 grade was connected inside, and, ahead [the], stress roll 2B to which the stress means of air-cylinder 4 grade was connected is prepared further.

[0004] moreover, under [for a horizontal level / a filter cloth 1], it sticks to the inferior surface of tongue of a filter cloth 1 -- making -- two or more vacuum chambers 5 and 5 .. arranges -- having -- these vacuum chambers 5 and 5 -- it connects with suction means, such as a vacuum pump which .. is not illustrating. Furthermore, between drive roll 2A and stress roll 2B, the filter cloth washing station 6 for washing a filter cloth 1 is formed, and while carrying out separation recovery of the solid-state residue which was not able to be collected with the scraper 9 which following-** with wash water, the blinding of a filter cloth 1 can be washed. In this washing station 6, wash water is injected towards a filter cloth 1 from the fixed spray nozzle 7.

[0005] In the above-mentioned belt filter, the undiluted solution slurry S is supplied on a filter cloth 1 from the nozzle 8 prepared in the start edge side upper part for the horizontal level of a filter cloth 1. transit of a filter cloth 1 -- doubling -- vacuum chambers 5 and 5 -- it moves forward, .. also carrying out vacuum suction of the undiluted solution slurry S -- making -- vacuum chambers 5 and 5, while vacuum suction will be canceled, if .. arrives at the maximum advance location A vacuum chamber 5 retreats to the original location, and it carries out vacuum suction of the undiluted solution slurry S, moving forward with a filter cloth 1 again subsequently. Moreover, it washes by performing Kakemizu to the undiluted solution slurry S on this vacuum chamber 5. And by repeating such actuation, sequential filtration of the undiluted solution slurry S supplied on the filter cloth 1 is carried out, and exfoliation recovery of the solid-state residue is carried out from scraping and a filter cloth 11 with the scraper 9 formed in drive roll 12A.

[0006] Although the flare condition of a filter cloth 1 can be adjusted now in the above-mentioned belt filter with the filter cloth stress means which consists of an air cylinder 4 and a stress roll 2B If the amount of supply of the undiluted solution slurry S which should be carried out a vacuum filtration is changed and default value is exceeded The belt filter concerned is the travel speed and vacuum chambers 5 and 5 of a filter cloth 1.. It is connected also with adopting the structure of aligning passing speed, a filter cloth 1 slips, and the trouble that the travel speed of a filter cloth 1 is not fixed occurs.

[0007] Moreover, in the spray nozzle 7 fixed [in the above-mentioned filter cloth washing station 6], since a filter cloth 1 could not fully be washed, it was easy to produce the blinding of a filter cloth 1, and exchange of a filter cloth 1 had to be performed frequently, and long-term

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] This invention raises dehydration of a level belt filter and the filtration effectiveness for the purpose of securing stable transit of a filter cloth for the undiluted solution slurry supplied on the filter cloth which goes around in the predetermined transit direction the 1st in a vacuum filtration and the level belt filter to wash irrespective of fluctuation of the amount of supply of an undiluted solution slurry, and the amount of Kakemizu. Moreover, it is made for the purpose of washing effectively the filter cloth through which solid-state residue adhered to the 2nd, and preventing the blinding of a filter cloth, with making possible long-term continuous running of a level belt filter.

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MEANS

[Means for Solving the Problem] This invention is characterized by coming to prepare a means control the contact force between said filter cloth and a roll with ** in the level belt filter equipped with the filter cloth of the shape of endless [which goes between two or more rolls containing a drive roll around], and a vacuum filtration means filter the undiluted-solution slurry supplied on this filter cloth from the vacuum chamber caudad prepared in this filter cloth while it installs a pivotable roll with ** in said drive roll side by side in contact with said filter cloth.

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[0011] Furthermore, as for the level belt filter of this invention, it is desirable to make the spray nozzle for wash water counter the filter cloth immediately after exfoliating solid-state residue, and to come to prepare this nozzle crosswise [of this filter cloth] free [reciprocation].

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the side elevation showing the level belt filter concerning this invention.

[Drawing 2] It is the top view of the drive roll 12A neighborhood shown in drawing 1.

[Drawing 3] It is the horizontal sectional view of the washing room 41 showing arrangement of a spray nozzle 43.

[Drawing 4] It is the side elevation showing the conventional level belt filter.

[Description of Notations]

11 Filter Cloth

11a A part for the horizontal level of the center of the filter cloth 11 upper part

12 Roll

12A Drive roll

12B Stress roll

15 Vacuum Chamber

30 Roll with **

35 Weight as a Control Means of Contact Force

40 Filter Cloth Washing Station

41 Filter Cloth Washing Room

43 Spray Nozzle

S Undiluted solution slurry

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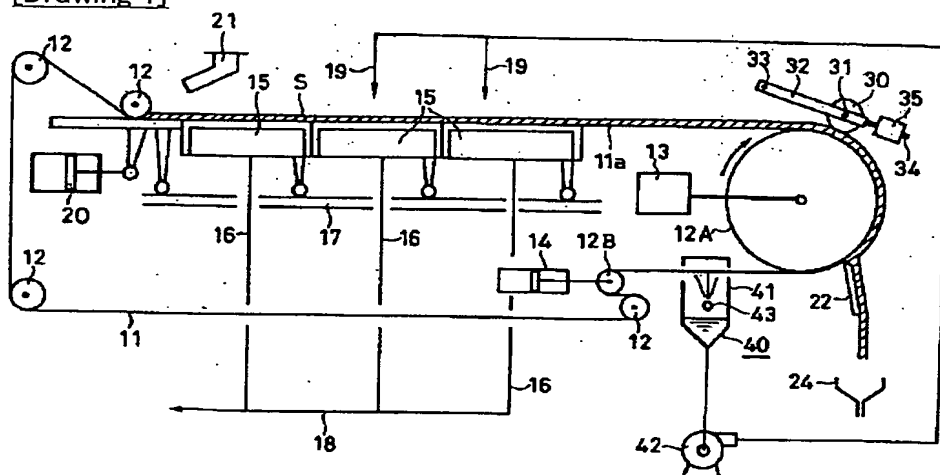
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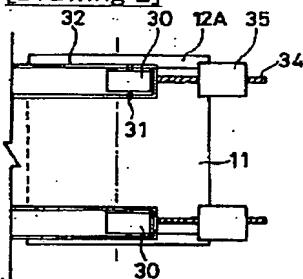
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DRAWINGS

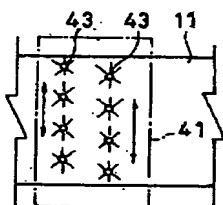
[Drawing 1]



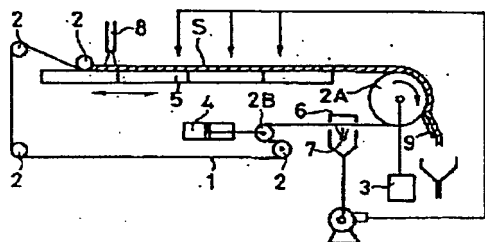
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]